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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,949	04/08/2005	Makoto Shimizu	10921.0295USWO	2273

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EXAMINER	
HERNANDEZ, NELSON D	

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
08/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,949	SHIMIZU, MAKOTO	
	Examiner	Art Unit	
	Nelson D. Hernández Hernández	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The Examiner acknowledges the amendments made to the title in response to the previous objection made. However, the title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The Applicant is advised to amend the claims to be more related to the claim invention .

Response to Amendment

2. The Examiner acknowledges the amended claims filed on May 15, 2008. **Claims 1, 3, 6 and 9** have been amended. **Claim 4** has been cancelled.

Response to Arguments

3. Applicant's arguments, see pages 6 and 7, filed May 15, 2008, with respect to the rejections of **claims 1-10** under 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of further consideration of the prior art previously applied. Therefore, this Office Action will be made Non-Final.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neter, US Patent 6,888,568 B1 in view of Sugiki, US Patent 5,990,948.

Regarding claim 1, in one embodiment, Neter discloses an area image sensor (Fig. 4) comprising: a plurality of image pick-up elements (190, 192, 194, 196 as shown in fig.4) arranged in a matrix including a plurality of element rows and a plurality of element columns (See fig. 4); a plurality of signal lines (see plurality of lines in fig. 4 as illustrated below) allocated to a respective one of the element columns (each column has two signal lines); a plurality of address lines (see Neter, address lines 186 as shown in fig. 4) each connected to the image pick-up elements of a respective one of the element rows (Neter, col. 9, line 34 – col. 10, line 65); and an address line selection circuit (Fig. 4: 180) connected to the address lines and configured to select plural ones of the address lines simultaneously (In a particular application of the invention as discussed in col. 10, lines 15-65, Neter discloses simultaneously reading out a plurality of pixels from different lines to be used for performing on-the-fly interpolation); and wherein each of the image pick-up elements belonging to said one of the element columns is connected to only one of the signal lines (each of the elements are

connected to only one of the signal lines as shown in fig. 4), and wherein each of the signal lines is connected to at least one of the image pick-up elements belonging to said one of the element columns (note that each of the signal lines is connected to at least one of the image pick-up elements belonging to said one of the element columns as shown in fig. 4) (Col. 9, line 34 – col. 10, line 65).

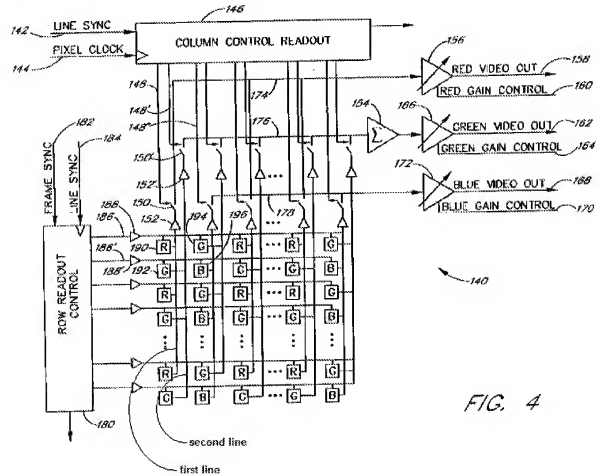


FIG. 4

Neter does not explicitly disclose a plurality of A/D converters connected to the signal lines, respectively.

However, Sugiki discloses an area image sensor (See fig. 10) comprising a plurality of image pick-up elements (401 as shown in fig. 10) arranged in a matrix

including a plurality of element rows and a plurality of element columns (See a plurality of element rows and a plurality of element columns as shown in fig. 10); a plurality of signal lines (See plurality of signal lines as shown in fig. 10 below); and a plurality of A/D converters (406 as shown in fig. 10; see also comparators 605 as shown in fig. 12) connected to the signal lines, respectively; wherein each of the image pick-up elements belonging to said one of the element columns is connected to only one of the signal lines (see each image pick-up elements belonging to said one of the element columns is connected to only one of the signal lines as shown in fig. 10) (Col. 8, line 27 – col. 10, line 63).

Therefore, taking the combined teaching of Neter in view of Sugiki as a whole, one of an ordinary skill in the art would appreciate the advantages of having an A/D converter for each signal lines and would find obvious to modify the teaching of Neter to have a plurality of A/D converters connected to the signal lines, respectively. The motivation to do so would have been to improve the area image sensor by increasing the speed for digitizing the image signals due to the use of a plurality of A/D converters that would, each process only a portion of the whole image area.

Regarding claim 2, the combined teaching of Neter in view of Sugiki as discussed and analyzed in claim 1 teaches that each of the image pick-up elements comprises a photoelectric conversion element, and a switching element (See Sugiki, elements 402 and 404 as shown in fig. 10) connected to the photoelectric conversion element. Grounds for rejecting claim 1 apply here.

Regarding claim 3, the combined teaching of Neter in view of Sugiki as discussed and analyzed in claim 1 teaches that two adjacent image pick-up elements belonging to said one of the element columns are connected to different ones of the signal lines (See Neter, red element 190 is connected to a first signal line in the column and green element is connected to a second signal line in the column as shown in fig. 4).

Regarding claim 5, the combined teaching of Neter in view of Sugiki as discussed and analyzed in claim 1 teaches a shift register connected to the A/D converters (See shift register 608 receiving the output of the comparators (A/D converters) 605 as shown in fig. 12 in Sugiki).

Regarding claim 6, Neter discloses an area image sensor (Fig. 4A) including a plurality of image pick-up elements (190, 192, 194, 196 as shown in fig.4) arranged in a plurality of columns and a plurality of rows (See fig. 4), the area image sensor comprising: a plurality of signal lines (see plurality of lines in fig. 4 as identified above) allocated to a respective one or two of the columns of the image pick-up elements (Fig. 4); a plurality of address lines (see Neter, address lines 186 as shown in fig. 4) each of which is allocated to a respective one of the rows of the image pick-up elements and connected to all the image pick-up elements of the row (Neter, col. 9, line 34 – col. 10, line 65); and an address line selection circuit (Fig. 4: 180) for selecting plural ones of the address lines simultaneously (In a particular application of the invention as discussed in col. 10, lines 15-65, Neter discloses simultaneously reading out a plurality of pixels from different lines to be used for performing on-the-fly interpolation); wherein small groups

(see small groups as defined with a square surrounding a red and a green image pick-up elements in fig. 4 below) each consisting of successive image pick-up elements are defined in each of the columns of the image pick-up elements, the number of the image pick-up elements included in each of the small groups corresponding to the number of the signal lines allocated to the column (the number of image pick-up elements in the group corresponds to the number of lines in the column (two image pick-up elements for two lines); see fig. 4 as illustrated below by the Examiner), the image pick-up elements included in each of the small groups being connected to different signal lines from each other (red element 190 is connected to a first signal line in the column and green element is connected to a second signal line in the column as shown in fig. 4); wherein large groups (see large group as defined using large squares surrounding two smaller groups as illustrated in fig. 4 below; although only one large group is illustrated, since the sensor area is larger than shown in the figure, multiple large groups are inherently present) each consisting of at least two successive small groups are defined in each of the columns of the image pick-up elements, and wherein, in each of the large groups, there are at least two connection patterns of the image pick-up elements to the signal lines on a small group basis (i.e. in the image sensor area, for the first columns it would show a pattern wherein the red image pick-up elements are connected to the first signal line and the green image pick-up elements are connected to the second signal line in that column as shown in fig. 4) (Col. 9, line 34 – col. 10, line 65).

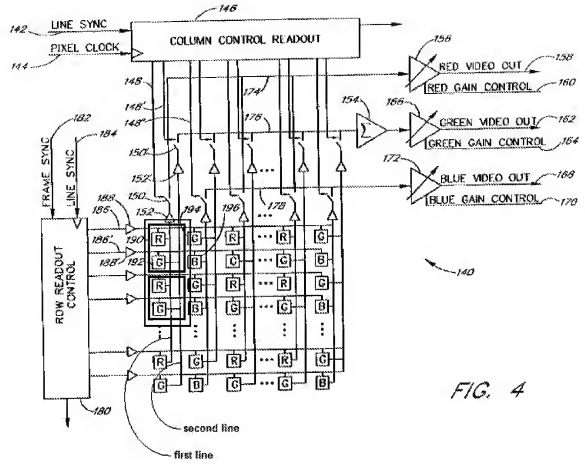


FIG. 4

Neter does not explicitly disclose A/D converters connected to the signal lines, respectively.

However, Sugiki discloses an area image sensor (See fig. 10) comprising a plurality of image pick-up elements (401 as shown in fig. 10) arranged in a matrix including a plurality of element rows and a plurality of element columns (See a plurality of element rows and a plurality of element columns as shown in fig. 10); a plurality of signal lines (See plurality of signal lines as shown in fig. 10 below); and a plurality of A/D converters (406 as shown in fig. 10; see also comparators 605 as shown in fig. 12) connected to the signal lines, respectively; wherein each of the image pick-up elements

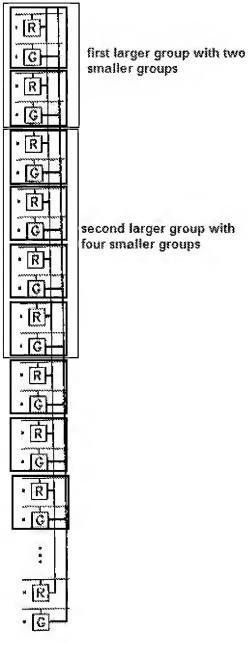
belonging to said one of the element columns is connected to only one of the signal lines (see each image pick-up elements belonging to said one of the element columns is connected to only one of the signal lines as shown in fig. 10) (Col. 8, line 27 – col. 10, line 63).

Therefore, taking the combined teaching of Neter in view of Sugiki as a whole, one of an ordinary skill in the art would appreciate the advantages of having an A/D converter for each signal lines and would find obvious to modify the teaching of Neter to have a plurality of A/D converters connected to the signal lines, respectively. The motivation to do so would have been to improve the area image sensor by increasing the speed for digitizing the image signals due to the use of a plurality of A/D converters that would, each process only a portion of the whole image area.

Regarding claim 7, the combined teaching of Neter in view of Sugiki as discussed and analyzed in claim 6 teaches that in each of the columns of the image pick-up elements, the number of the small groups included in each of the large groups is powers of 2 (In Neter, note that the large group as illustrated by the Examiner as shown in fig. 4 above include two small groups). Grounds for rejecting claim 7 6 apply here.

Regarding claim 8, the combined teaching of Neter in view of Sugiki as discussed and analyzed in claim 6 teaches that two or more kinds of large groups differing from each other in number of the small groups included therein are defined in each of the columns of the image pick-up elements (as illustrated below if the image sensor is expanded to show more image pick-up element, it would teach the capacity of

having two or more kinds of large groups differing from each other in number of the small groups included therein defined in each of the columns of the image pick-up elements. A portion of the expanded image sensor in Neter, Fig. 4 is illustrated below). Grounds for rejecting claim 6 apply here.



Regarding claim 9, the combined teaching of Neter in view of Sugiki teaches the same as discussed and analyzed in claims 4 and 5.

Regarding claim 10, the combined teaching of Neter in view of Sugiki as discussed and analyzed in claim 6 teaches that the A/D converter compares an inputted signal voltage with a predetermined reference voltage and outputs, to the shift register, a count value when the both voltages correspond to each other as a digital signal (See Sugiki, col. 10, lines 1-48). Grounds for rejecting claim 6 apply here.

Conclusion

6. Because new grounds of rejection have been made to reject unamended limitations previously presented in dependent claims and now incorporated in independent form, this Office Action is made NON-FINAL.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernández Hernández whose telephone number is (571) 272-7311. The examiner can normally be reached on 9:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson D. Hernández Hernández
Examiner
Art Unit 2622

NDHH
August 17, 2008

/Lin Ye/
Supervisory Patent Examiner, Art Unit 2622